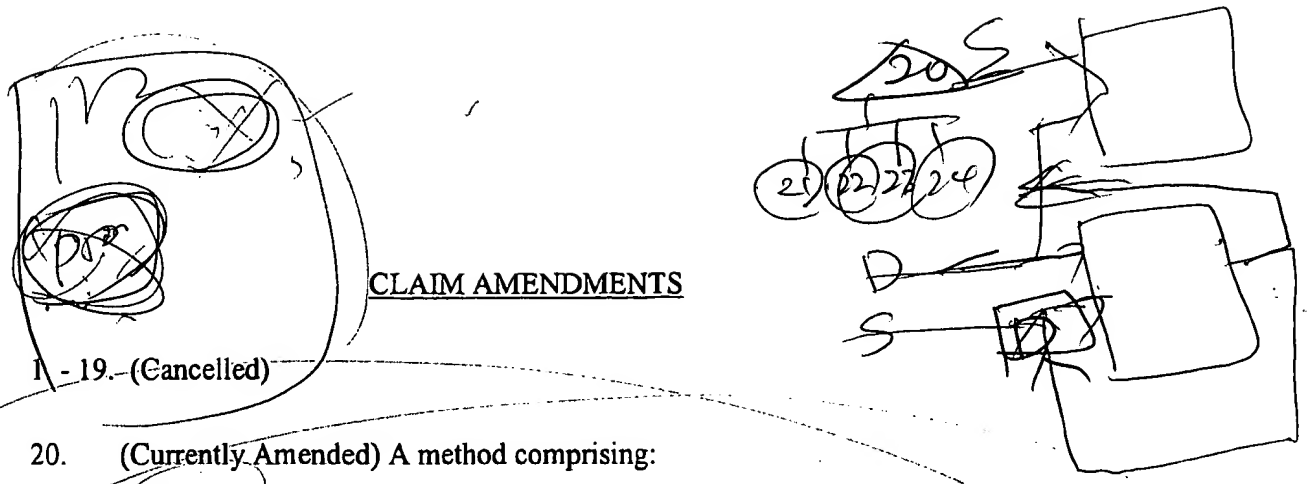


CLAIM AMENDMENTS

1 - 19. (Cancelled)

20. (Currently Amended) A method comprising:

using a data bit signal and a first strobe signal to generate at least one pulse train signal, said at least one pulse train signal including a first pulse train signal having a duty cycle that increases with an increase in a degree of skew between the data bit signal and the first strobe signal and a second train pulse signal having a duty cycle that decreases with a decrease in the degree of skew; and

regulating a timing relationship between the data bit signal and a second strobe signal based on the degree of skew indicated by the duty cycles of the first and second pulse train signals.

21. (Previously Presented) The method of claim 20, further comprising:

filtering the first pulse train signal to produce a first filtered signal;

filtering the second pulse train signal to produce a second filtered signal; and

amplifying a difference of the first and second filtered signals to indicate the degree of skew.

22. (Previously Presented) The method of claim 20, further comprising:

storing a calibration value indicative of the degree of skew.

23. (Previously Presented) The method of claim 20, further comprising:

delaying the first strobe signal based on the calibration value to produce the second strobe signal.

24. (Previously Presented) The method of claim 20, further comprising:

causing the data bit signal to indicate a predetermined data pattern to generate at least one of the first and second pulse train signals.

25. (Previously Presented) A data receiver comprising:

buffers, each buffer to latch a different data bit signal;

a first circuit to:

for each data signal, generate at least one associated pulse train signal in response to a strobe signal and the data bit signal, a duty cycle of said at least one associated pulse train signal indicating a degree of skew between the associated data bit signal and the strobe signal; and

a second circuit coupled to the first circuit and the buffers to regulate latching of the data bit signals by the buffers based on the indicated degrees of skew;

multiplexing circuitry to select one of the data bit signals,

wherein the first circuit comprises a third circuit to provide said at least one pulse train signal indicative of the degree of skew between the selected data bit signal and the strobe signal, and

wherein said at least one pulse train signal comprises:

a first pulse train signal having a duty cycle that increases with an increase in the degree of skew between the selected data bit signal and the strobe signal and a second pulse signal having a duty cycle that decreases with a decrease in the degree of skew between the selected data bit signal and the strobe signal.

26. (Previously Presented) The data receiver of claim 25, wherein the first circuit comprises:

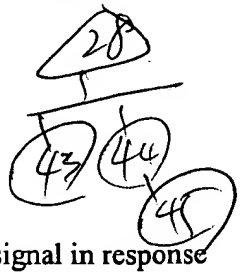
registers, each register being associated with a different one of the data bit signals and indicating the degree of skew between the strobe signal and the associated data bit signal.

27. (Previously Presented) The data receiver of claim 25, wherein the first circuit further comprises:

a first low pass filter to filter the first pulse train signal to produce a first filtered signal;

a second low pass filter to filter the second pulse train signal to produce a second filtered signal; and

an amplifier to produce the indication of the degree of skew between the selected data bit signal and the strobe signal based on the difference of the first and second filtered signals.



28. (Currently Amended) A data receiver comprising:

buffers, each buffer to latch a different data bit signal;

a first circuit to:

for each data signal, generate at least one associated pulse train signal in response to a strobe signal and the data bit signal, a duty cycle of said at least one associated pulse train signal increasing with one of an increase and a decrease in a degree of skew between the associated data bit signal and the strobe signal and decreasing with the other of an increase and a decrease in the degree of skew; and

a second circuit coupled to the first circuit and the buffers to regulate latching of the data bit signals by the buffers based on the indicated degrees of skew, wherein

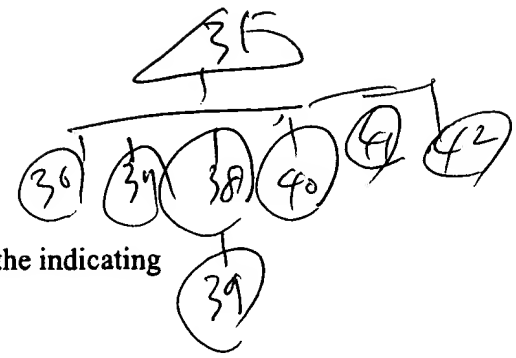
the first circuit comprises registers, each register being associated with a different one of the data bit signals and indicating the degree of skew between the strobe signal and the associated data bit signal.

29.-34. (Cancelled)

35. (Previously Presented) A method comprising:

using a data bit signal and a first strobe signal to generate at least one pulse train signal, a duty cycle of said at least one pulse train signal increasing with one of an increase and a decrease in a degree of skew between the data bit signal and the first strobe signal and decreasing with the other of an increase and a decrease in the degree of skew; and

regulating a timing relationship between the data bit signal and a second strobe signal based on the degree of skew indicated by the duty cycle.



36. (Previously Presented) The method of claim 35, wherein the indicating comprises:

storing a calibration value indicative of the degree of skew.

37. (Previously Presented) The method of claim 35, further comprising:

delaying the first strobe signal based on the calibration value to produce the second strobe signal.

38. (Previously Presented) The method of claim 35, wherein said at least one pulse train signal comprises:

a first pulse train signal having a duty cycle that increases with an increase in the degree of skew and a second pulse signal having a duty cycle that decreases with a decrease in the degree of skew.

39. (Previously Presented) The method of claim 38, further comprising:

filtering the first pulse train signal to produce a first filtered signal;

filtering the second pulse train signal to produce a second filtered signal; and

amplifying a difference of the first and second filtered signals to indicate the degree of skew.

40. (Previously Presented) The method of claim 35, wherein the duty cycle of said at least one pulse train signal indicates the degree of skew.

41. (Previously Presented) The method of claim 35, further comprising:

causing the data bit signals to indicate a predetermined data pattern to generate the pulse train signal.

42. (Previously Presented) The method of claim 35, wherein said at least one pulse train signal indicates multiple non-zero degrees of skew.

43. (New) The data receiver of claim 28, wherein the second circuit comprises:

a delay chain to receive the strobe signal, the delay chain including taps indicating the strobe signal delayed by different delays; and

multiplexing circuitry to selectively couple the taps to the buffers based on the indicated degrees of skew.

44. (New) The data receiver of claim 28, further comprising:

multiplexing circuitry to select one of the data bit signals, and

wherein the first circuit comprises a third circuit to, for each of the data signals, provide said at least one pulse train signal indicative of the degree of skew between the selected data bit signal and the strobe signal.

45. (New) The data receiver of claim 44, wherein said at least one pulse train signal comprises:

a first pulse train signal having a duty cycle that increases with an increase in the degree of skew between the selected data bit signal and the strobe signal and a second pulse signal having a duty cycle that decreases with a decrease in the degree of skew between the selected data bit signal and the strobe signal.

46. (New) The data receiver of claim 45, wherein the first circuit further comprises:

a first low pass filter to filter the first pulse train signal to produce a first filtered signal;

a second low pass filter to filter the second pulse train signal to produce a second filtered signal; and

an amplifier to produce the indication of the degree of skew between the selected data bit signal and the strobe signal based on the difference of the first and second filtered signals.

47. (New) The data receiver of claim 28, wherein said at least one associated pulse train signal indicates multiple non-zero degrees of skew.

correction circuit 20 is coupled between a different one of the data lines 23 and the associated data output line 27.

Other arrangements are within the scope of the following claims. For example, Fig. 14 depicts a receiver 100 that includes multiplexing features to minimize the number of skew correction circuits. In this manner, the skew correction circuit 100 provides multiple strobe signals (called $STB_0, \ldots STB_i$), each of which is associated with one of the data lines 23 and may be used to compensate a different skew. In this manner, the skew correction circuit includes a quadrature detector 110 and an ADC 112 that function similar the quadrature detector 22 and the ADC 26 of the skew correction circuit 20. The output terminals of the ADC 112 are coupled to error registers 114. Each error register 114, in turn, is associated with a different data line 23 and stores an indication of the delay to be used with the strobe signal that is associated with the data line 23. In this manner, the output terminals of each error register 114 are coupled to the select terminals of a different multiplexer 118, and the input terminals of each multiplexer 118 are coupled to taps of a delay chain 116 that receives a buffered strobe signal. The output terminal of each multiplexer 118 is coupled to the clock input of a different data bit receive buffer that may be formed from a D-type flip-flop, for example. Due to this arrangement, the indication that is stored in a particular error register 114 causes the associated multiplexer 118 to select the appropriate tap of the delay chain 116 and thus, select the appropriate strobe delay. Thus, the skew correction circuit 110 is capable of correcting the skew that is associated with each data line 23.

For purposes of storing the appropriate indications of the error registers 114, the skew correction circuit includes a multiplexer 124 that has input terminals that are coupled to the output terminals of the multiplexers 118, and the output terminal of the multiplexer 124 is coupled to an input terminal of the quadrature detector 110. The other input terminal of the quadrature multiplexer 110 is coupled to the output terminal of a multiplexer 102. The input terminals of the multiplexer 110, in turn, are coupled to the data lines 23. A controller 120 of the skew correction circuit 100 is coupled to the selection terminals of the multiplexers 102 and 118 and to the error registers 114 so that the controller 120 may selectively measure the skews that are associated with each of the data lines 23 and cause an indication of the measured skew to be stored in the appropriate error register 114.

Among the other features of the skew correction circuit 100, the circuit 100 may